# PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

## PCT

### NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|---|---|
| **Date of mailing** (day/month/year)<br>17 August 2001 (17.08.01) | |
| **International application No.**<br>PCT/US00/17439 | **Applicant's or agent's file reference**<br>RCA90267 |
| **International filing date** (day/month/year)<br>26 June 2000 (26.06.00) | **Priority date** (day/month/year)<br>05 October 1999 (05.10.99) |
| **Applicant**<br>RAMASWAMY, Kumar et al | |

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

02 May 2001 (02.05.01)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

**The International Bureau of WIPO**
**34, chemin des Colombettes**
**1211 Geneva 20, Switzerland**

Facsimile No.: (41-22) 740.14.35

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Olivia TEFY

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FYI/FYI EXPRESS EV025963026US -fax nr: 609-734-9700 -12 pages-

# PATENT COOPERATION TREATY

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

RECEIVED FEB - 6 2002

To:

TRIPOLI, Joseph S.
THOMSON MULTIMEDIA LICENSING INC.
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2 Independence Way
Princeton, New Jersey 08540
ETATS-UNIS D'AMERIQUE

Confirmation FAX-Bestätigung

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

| | |
|---|---|
| Date of mailing *(day/month/year)* | 25.01.2002 |
| Applicant's or agent's file reference: RCA90267 | **IMPORTANT NOTIFICATION** |

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US00/17439 | 26/06/2000 | 05/10/1999 |

Applicant: THOMSON LICENCING S.A et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

| Name and mailing address of the IPEA/ | Authorized officer |
|---|---|
| European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Barrio Baranano, A<br><br>Tel.+49 89 2399-8621 |

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

## (PCT Article 36 and Rule 70)

| Applicant's or agent's file reference | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| RCA90267 | | |
| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
| PCT/US00/17439 | 26/06/2000 | 05/10/1999 |
| International Patent Classification (IPC) or national classification and IPC<br>H04L12/28 | | |
| Applicant<br>THOMSON LICENCING S.A et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

| Date of submission of the demand | Date of completion of this report |
|---|---|
| 02/05/2001 | 25.01.2002 |
| Name and mailing address of the international preliminary examining authority:<br>European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized officer<br>Hamer, J<br>Telephone No. +49 89 2399 8827 |

Form PCT/IPEA/409 (cover sheet) (January 1994)

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/17439

## I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
**Description, pages:**

| | | | | |
|---|---|---|---|---|
| 1-3,5-36 | as originally filed | | | |
| 4,4a | as received on | 07/01/2002 | with letter of | 07/01/2002 |

**Claims, No.:**

| | | | | |
|---|---|---|---|---|
| 1-9 | as received on | 07/01/2002 | with letter of | 07/01/2002 |

**Drawings, sheets:**

| | |
|---|---|
| 1/19-19/19 | as originally filed |

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

☐ the description, pages:

☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

☐ paid additional fees.

☐ paid additional fees under protest.

☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:
**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☒ all parts.

☐ the parts relating to claims Nos. .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | |
|---|---|---|
| Novelty (N) | Yes: | Claims 1-9 |
| | No: | Claims |

| | | | |
|---|---|---|---|
| Inventive step (IS) | Yes: | Claims | 1-9 |
| | No: | Claims | |
| Industrial applicability (IA) | Yes: | Claims | 1-9 |
| | No: | Claims | |

2. Citations and explanations
**see separate sheet**

## IV- Non-Unity

The new claims submitted and presently on file do not fulfil the requirements of Rule 13.1 PCT in that the subject-matter of the claims of the present application is not linked by a single inventive concept (Rule 13.1, PCT).

The two groups of inventions are the following:

Invention I: Claims 1 to 4; An apparatus interfacing an analogue signal to a DSL line.

Invention II: Claims 5 to 9; An apparatus for providing call management.

These two inventions could be implemented independently of each other and share neither an inventive concept (Rule 13.1, PCT), nor special technical features (Rule 13.2, PCT). Claim 5 is concerned with receiving ATM cells from a customer premises equipment. No such equipment is mentioned in claim 1. Claim 1 deals with a DSL line which is not mentioned in claim 5. Claim 5 is concerned with switching equipment, claim 1 is concerned with an end user telephone.

As a full preliminary search report has been established, a full preliminary examination has been carried out.

## V- Reasoned Statement

1. The following documents are cited:

D1: WO 99 37117 A (ERICSSON TELEFON AB L M) 22 July 1999 (1999-07-22)
D2: EP-A-0 836 356 (MELITA INTERNATIONAL CORP) 15 April 1998 (1998-04-15)
D3: WO 99 41936 A (GILLMAN RICHARD JAMES ;MACEY RICHARD HENRY (GB); MILES RICHARD DAV) 19 August 1999 (1999-08-19)
D4: WO 99 39541 A (AT & T CORP) 5 August 1999 (1999-08-05)

D5: US-A-5 930 238 (NGUYEN ANNIE THANHVAN) 27 July 1999 (1999-07-27)

2. The subject-matter of claim 1 is concerned with an apparatus used in conjunction with a digital subscriber line. The application is concerned with the use of an analogue telephone connected to a digital subscriber line. In the claim a first interface circuit receives a voice signal and converts it into a digital signal. A processor then converts the signal to an ATM AAL1 format and passes it to a DSL modem.

Document D1 essentially contains these feature. From fig.1 of D1, it can be seen that analogue voice POTS signals enter an apparatus and are converted into digital form (PCM, 32) by line circuitry (36). They are than passed to a circuit emulation device which converts these signals to ATM AAL1 format, see page 20, lines 1 to 8. These signals are then passed to a modem/transceiver (22) which outputs them in a modulated form onto an external physical interface. One example of the external interface given on page 2, lines 3 to 4, is a DSL subscriber line. This means that the function of the modem of D1 is the same as that of claim 1, i.e. that a DSL analogue signal is generated.

The applicant has argued that D1 only contemplates a system using ATM level 2 layers. The examiner cannot agree with this view. His attention is drawn to the above mentioned passage on page 20 of D1.

As all the features are known from D1, claim 1 cannot be considered to involve an inventive step. As a result, claim 1 does not meet the requirements of Article 33(3) PCT.

3. Independent claim 5 is concerned with an apparatus for providing call management in a digital subscriber loop environment. The claim defines an interface which receives cells from a customer premises equipment connected to an ATM switch coupled to a voice network switching equipment. A processor sets up a virtual circuit path from the ATM switch to the voice network switching equipment in response to a connection request from the

customer premises equipment.

In the description of the present application from page 3, line 16 to page 4, line 17, the prior art is discussed. According to this section, it is known from the prior art to intercept packetised cells from e.g. a POTS telephone and to set up a virtual path to a voice network switch. In fact, the use of virtual circuits is very well know, see e.g. D3 (see passages cited in the international search report). As a result, broadly stated claim 5 does not seem to involve an inventive step over the prior art. Claim 5 does not therefore meet the requirements of Article 33(3) PCT.

4. Dependent claims 2 to 4 and 6 to 9 are not appended to an independent claim which meets the requirements of Article 33(3) PCT. Furthermore, their subject-matter does not appear to contain anything of inventive significance which added to that of claim 1 or claim 5 would provide an inventive step No features are disclosed which are not either already known from the prior art or which are not obvious to a person skilled in the art of communications networks.

5. The following deficiencies are found in the application:

a) The independent claims do not meet the requirements of Rule 6.3(b) PCT in that they are not divided into the two-part form.
b) The documents cited in the International Search Report should have been referenced and briefly discussed in the description, Rule 5.1(a)(ii), PCT.
d) The description should have been modified to bring it into agreement with the modified independent claims, Rule 5.1(a)(iii), PCT.

using multiple T1 trunks 24. This interface is, for example, GR-303 interface, the same as used by digital loop carriers (DLC), as described before in connection with Fig. 1.

It is believed the voice path used in the Coppercom architectures is a permanent virtual circuit (PVC) that is configured during the provisioning of the CPE device, not in real time. This PVC carries all voice traffic as well as signaling traffic. The packet architecture used is ATM Adaptation Layer 2 (AAL2) for ATM encapsulation.

AAL2 has the ability to allow multiple connections multiplexed on one virtual circuit (VC). The multiplexing of multiple streams of data is done at the ATM Adaptation Layer. ATM adaptation only takes place at the endpoints of an ATM network. Cells in an ATM network are routed or switched based upon their virtual path/virtual channel (VP/VC) identifier. In the case of a permanent virtual circuit (PVC), as in the case of the Coppercom architecture, the cells are switched to the same permanent destination previously established at the time of the CPE provisioning. The Coppercom architecture does not use the ATM network to setup and teardown the voice connections, but instead uses the voice gateway. It is, therefore, not possible to take advantage of the ATM network for switching of individual voice calls. This is because, as explained previously, in the Coppercom architecture, multiple voice calls are multiplexed along with signaling data onto a single ATM virtual circuit. The contents of the ATM cell stream are transparent to the ATM network. The ATM network only examines the header to ensure they are sent to the correct destination. The call assignment or switching in this architecture is independent of the ATM network. The call assignment cannot be determined until the signaling and voice data is de-multiplexed at the voice gateway.

Also, WO 99/37117 also describes an apparatus for providing multi-service circuit for telecommunications. However, this apparatus is the same as the previously mentioned architecture, in that it uses ATM level 2 adaptation layers, with all of its drawbacks as mentioned before, unlike the present invention.

## CLAIMS

1. An apparatus (33-1) comprising:

a first interface circuit (44-1) operative to receive a first analog signal representing a voice signal from an end user telephone (38-1) and convert the first analog signal to a digital signal in a first format;

a data processor (45) operative to convert the digital signal into a second digital format, the second digital format comprising asynchronous transfer mode adaptation layer type 1 format; and

a DSL modem operative to convert the digital signal in the second format into a DSL analog signal for transport over a physical connection (DSL) and subsequent routing by an ATM switch (35).

2. The apparatus of claim 1 further comprising a data signal interface (420) for interfacing to a computer to provide both voice and data services over the same DSL physical connection.

3. The apparatus of claim 1 wherein the data processor further comprising a voice path/voice channel generation function.

4. The apparatus of claim 1 wherein the data processor communicates with a service control point to obtain call set up information.

5. An apparatus (37; Fig. 13) for providing call management in a digital subscriber loop environment, comprising:

an interface (1320) capable of receiving ATM cells from a customer premises equipment ( 33-1) and an ATM switch (35) coupled to a voice network switching equipment (40); and

a processor operative to receiving a connection request data packet from the customer premises equipment (33-1) and for dynamically setting up a virtual circuit path from the ATM switch (35) to the voice network switching equipment in response to the connection request data packet from the customer premises equipment.

6. The apparatus of claim 5 wherein the apparatus sends a second data packet back to the customer premises equipment containing connection information about the virtual circuit path setup between the ATM switch and the voice network switching equipment.

7. The apparatus of claim 1 wherein the apparatus first determines whether a communication slot between the ATM switch and the voice network switching equipment is available before dynamically setting up the virtual circuit path.

8. The system of claim 5 wherein the connection request data packet is an ATM cell.

9. The system of claim 8 wherein the ATM cell is an ATM adaptation layer 1 cell.

using multiple T1 trunks 24. This interface is, for example, GR-303 interface, the same as used by digital loop carriers (DLC), as described before in connection with Fig. 1.

It is believed the voice path used in the Coppercom architectures is a permanent virtual circuit (PVC) that is configured during the provisioning of the CPE device, not in real time. This PVC carries all voice traffic as well as signaling traffic. The packet architecture used is ATM Adaptation Layer 2 (AAL2) for ATM encapsulation.

AAL2 has the ability to allow multiple connections multiplexed on one virtual circuit (VC). The multiplexing of multiple streams of data is done at the ATM Adaptation Layer. ATM adaptation only takes place at the endpoints of an ATM network. Cells in an ATM network are routed or switched based upon their virtual path/virtual channel (VP/VC) identifier. In the case of a permanent virtual circuit (PVC), as in the case of the Coppercom architecture, the cells are switched to the same permanent destination previously established at the time of the CPE provisioning.

The Coppercom architecture does not use the ATM network to setup and teardown the voice connections, but instead uses the voice gateway. It is, therefore, not possible to take advantage of the ATM network for switching of individual voice calls. This is because, as explained previously, in the Coppercom architecture, multiple voice calls are multiplexed along with signaling data onto a single ATM virtual circuit. The contents of the ATM cell stream are transparent to the ATM network. The ATM network only examines the header to ensure they are sent to the correct destination. The call assignment or switching in this architecture is independent of the ATM network. The call assignment cannot be determined until the signaling and voice data is de-multiplexed at the voice gateway.

## Claims

1. Apparatus comprising:

interface circuit for receiving a first analog signal and converting the first analog signal into digital data in a first format;

data processor for converting the digital data in the first format representing the first analog signal into digital data in a second format, the second format comprising asynchronous transfer mode adaptation layer type 1 format; and

modem for converting the digital data in the second format to a second analog signal.

2. The apparatus of claim 1 wherein the first analog signal is received through telephone wires.

3. The apparatus of claim 1 wherein the second analog signal comprises a digital subscriber loop signal.

4. The apparatus of claim 1 wherein the data processor further comprising a voice path/voice channel generation function.

5. The apparatus of claim 1 wherein the digital data in a second format comprises a voice path identifier.

6. The apparatus of claim 1 wherein the digital data in a second format comprises a voice channel identifier.

7. Apparatus comprising:

interface for interfacing to a device for controlling customer equipment;

interface for interfacing to a data network switching equipment;

interface for interfacing to a voice network switching equipment; and

processor, coupled to the interfaces, for providing a connection from the data network switching equipment to the voice network switching equipment, when a connection request is received from the device for controlling customer equipment.

8. The apparatus of claim 7 wherein the connection is provided by the processor in substantially real time.

9. The apparatus of claim 7 wherein the data network switching equipment comprises a packet network switching equipment.

10. The apparatus of claim 9 wherein the packet network switching equipment comprises an ATM switching equipment.

11. The apparatus of claim 10 wherein the connection comprises asynchronous transfer mode adaptation layer type 1 format.

12. The apparatus of claim 11 wherein the device for controlling customer equipment formats signal from customer equipment into asynchronous transfer mode adaptation layer type 1 format.

13. The apparatus of claim 7 wherein the interface for interfacing to a voice network switching equipment comprises a T1 format.

14. The apparatus of claim 7 wherein the interface for interfacing to a device for controlling customer equipment the comprises in-band signaling.

15. Apparatus for providing a connection to an end user device, comprising:

means for connecting the end device through a permanent virtual circuit connection to a data network; and

means for setting up a switched virtual circuit connection through the data network.

16. The apparatus of claim 15 wherein the permanent virtual circuit is in the ATM AAL type 1 format.

17. The apparatus of claim 16 wherein the switched virtual circuit is in the ATM AAL type 1 format.



IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *With international search report.*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*